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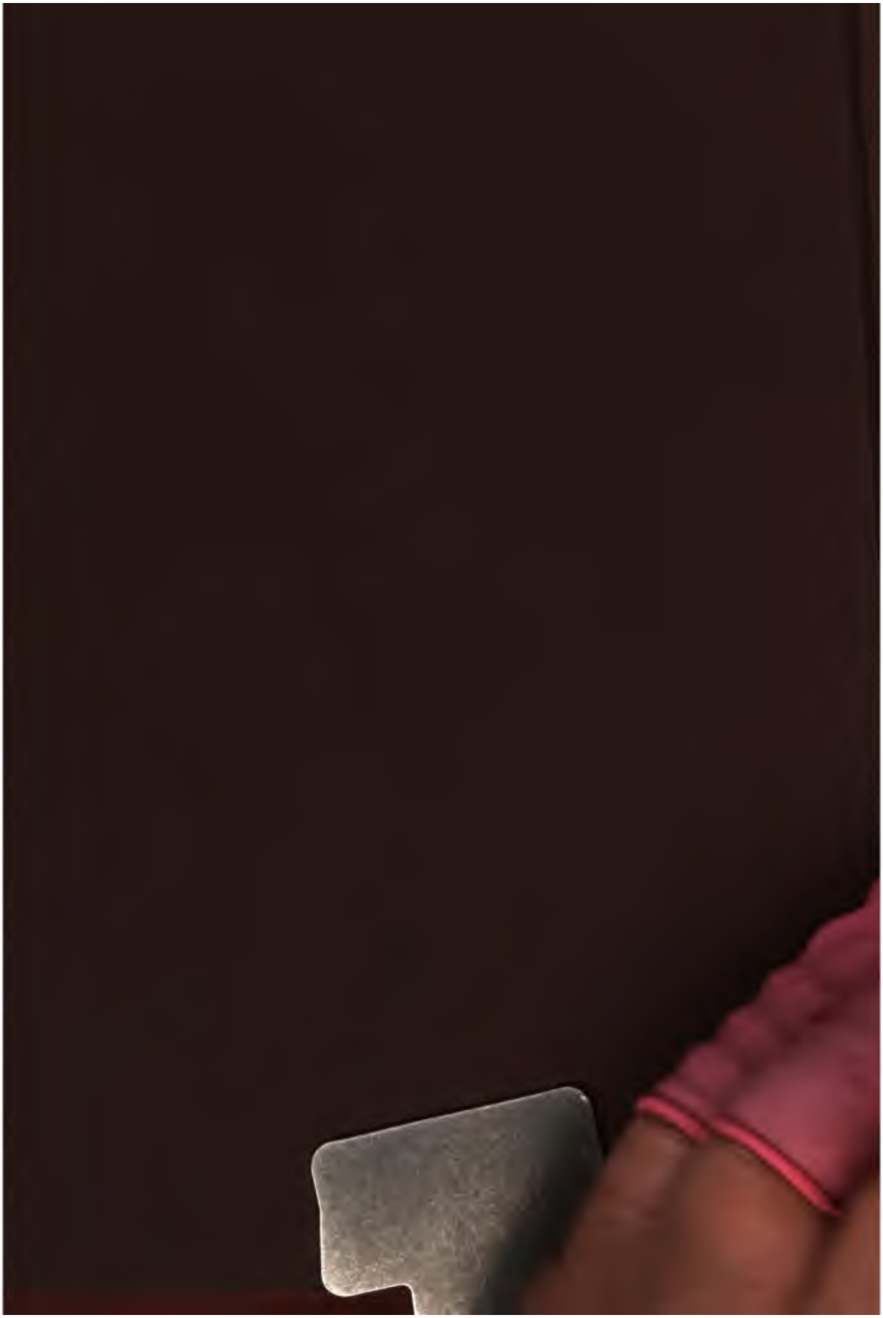
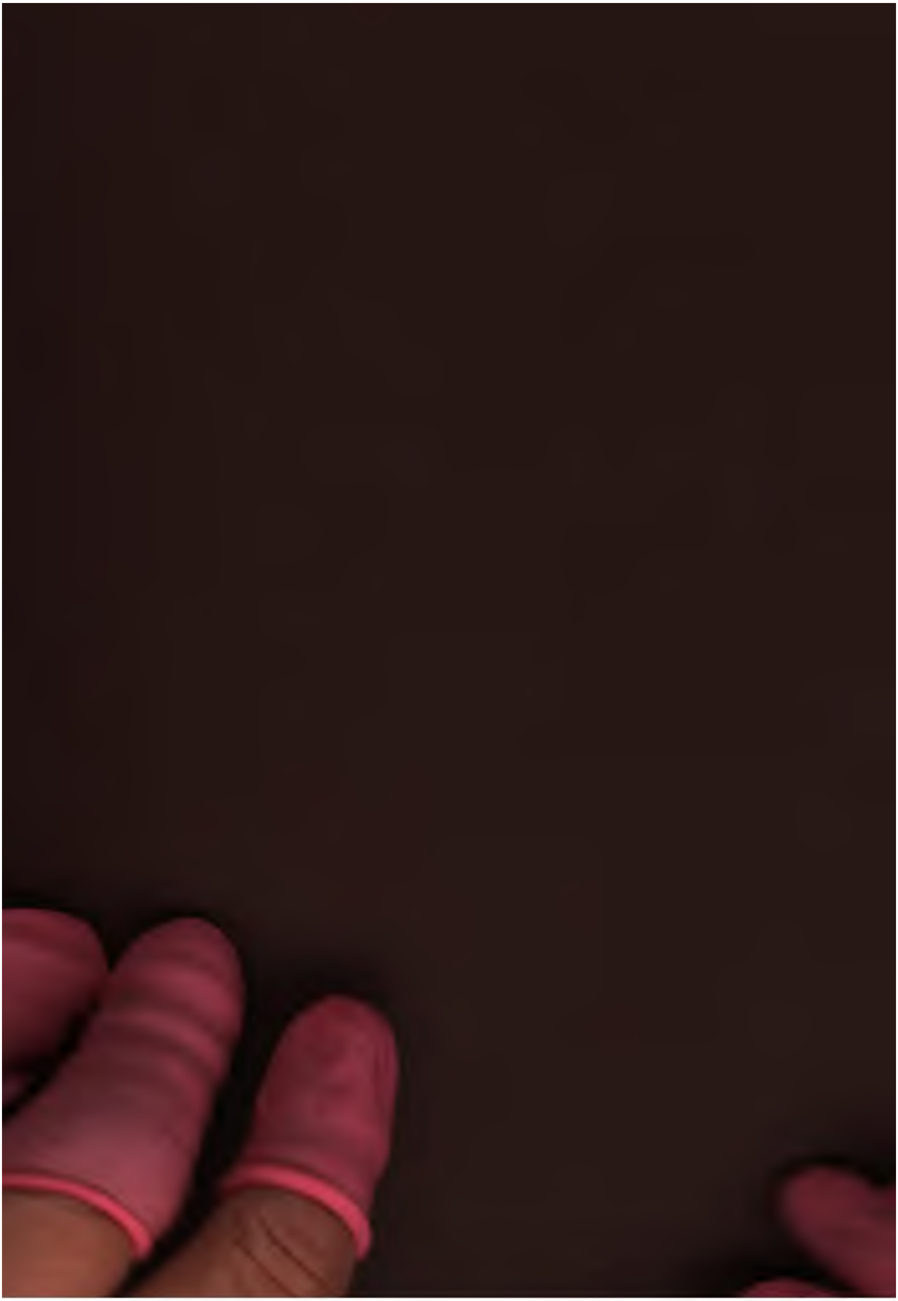
SOME COMMON INJURIES TO LIMBS

EDWARD COTTERELL





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ON SOME COMMON INJURIES TO LIMBS.

ON SOME

COMMON INJURIES TO LIMBS

THEIR

TREATMENT AND AFTER-TREATMENT

INCLUDING

BONE-SETTING

(SO-CALLED)

BY

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PREFACE.

In presenting this small book to the profession, I am actuated by an earnest desire to draw more attention than is generally given to the after-treatment of injuries, and more especially to those injuries occurring in the extremities.

The neglect of this after-treatment is the cause of bone-setters flourishing in our midst, and I have endeavoured in the following pages to give a short account of some common injuries to limbs, with the hope that a more extended knowledge of the after-treatment necessary in order to bring about a successful issue, will help to eradicate the popular faith in the so-called bone-setting.

I am indebted to Messrs. Maw, Son and Thompson for the illustration of the suspension apparatus, to Messrs. Krohne and Sesemann for those of Carr's splint, and to Mr. Hawksley for the drawing of his belt for rider's sprain. The remainder of the illustrations are original, having been drawn from photographs taken under my direction.

BICESTER,
and 7 WELBECK ST., LONDON, W.
March, 1885.

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SOME COMMON INJURIES TO LIMBS AND THEIR TREATMENT.

CHAPTER I.

INTRODUCTORY.

A distinguished surgeon* has recently observed that "it was an opprobrium to surgery that so many people sought the advice of bone-setters," and all surgeons will probably agree with this statement. But if so many people consult bone-setters, and get relief from their ailments, which doubtless many do, for we must not shut our eyes to this fact, it surely suggests, that as a profession we are ignorant of some mode or method of treating injuries which the bone-setter possesses and practices.

Until in 1871, when Dr. Wharton Hood gave the medical world his experiences during a pseudo-pupilage to the late Mr. Hutton, the ignorance in this "neglected corner in the domain of surgery" was very general, nor was it confined to the general body of the profession, for in a clinical lecture by Sir James Paget* upon "Cases that bone-setters cure," that distinguished surgeon's remarks were based principally upon conjecture, and which, in subsequent editions of his essay after the appearance of Dr. Hood's book, he found necessary to considerably modify.

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* **Mr. Hulke at the Clinical Society, *Lancet*, vol. i., 1880.**

Now let us enquire into the cause of the apathy of the profession in this matter, and here I cannot do better than quote Dr. Hood's own words upon the subject. He says,† "I think there can be little doubt that the neglect of the profession to inquire into the truths lurking under bone-setting has been mainly due to two causes. First, to the serious and often fatal results that have occurred in the practice of all bone-setters, and that have probably occurred very often in the hands of the less skilful and less discreet members of the fraternity. Secondly, to the practical effect of the statement that a 'bone was out,' and that it had been replaced.

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* "Cases that bone-setters cure." *Brit. Med. Jour.*, vol. xiv., 1867.

† *On bone-setting, so-called.* By Wharton P. Hood, M.D. Page 9.

Surgeons who knew this statement to be entirely without foundation have perhaps been too ready to attribute it to intentional fraud, and a desire to deceive; and have not been sufficiently ready to make allowances for the ignorance of those with whom it originated."

"Hence they have been annoyed and disgusted both by its falisty, and by the imputation which it would cast upon themselves, and have attributed the cure to the operation of mental influences, or to the mere lapse of time, or to the effect of previous treatment, and have refrained from inquiring what colourable ground there might be upon which the idea of dislocation could rest, or what change the manipulations of the bone-setter had really brought about."

Now that we know more about the subject, thanks to Dr. Hood, and others who have followed in his wake, we have learnt that bone-setting so-called consists in breaking down adhesions in and about stiff joints, and unfortunately for us, the cause of this immobility has been, in a great majority of cases, due to the reluctance of surgeons to see that, after fractures and dislocations, the joints which have been included in the bandages, are perfectly mobile; and it is the after treatment of these injuries to which we should direct more attention. At the same time I think it is generally admitted that there is very little practically known with regard to some of the slighter injuries to which the limbs are liable, and of which the bone-setter, if he be a distinguished member of his craft, is quite *au fait* and thus, as Sir James Paget* says, that few "are likely to practice without having a bone-setter for a rival; and if he can cure a case which you have failed to cure, his fortune may be made and yours marred."

Let me give an illustration of a typical case:—A man meets with a Pott's fracture for which he calls in his surgeon, who treats him *secundum artem.* When the time comes for the splints to be removed the ankle joint will sure to be found very stiff, and walking an impossibility from pain.

The usual treatment pursued in these cases is to recommend shampooing, together with passive motions of the joint, which perhaps *in time* will give the patient a fairly moveable limb. But this will not do in these days of high pressure and rapid locomotion, and if our surgeon does not quickly set the ankle-joint free, another opinion is generally called in, who probably advises more passive motion. Now this passive motion is very painful both at the time and afterwards, for synovitis is produced, due to stretching or only partially rending the adhesions, so that probably the last stage is worse than the first. By and bye our patient wearied by pain and by irritation, and disgusted by his inability to walk, consults a bone-setter, and now let us note the difference in the treatment as pursued by the charlatan.

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* *Loc. cit.*

The bone-setter is a man who has the "gift of the gab" and upon the patient beginning to tell him the history of the case he will probably interrupt him, and tell him that he knows all about it, and further that the patient came to know what was the matter, not to tell the bone-setter. This latter then states that there is "a bone out"—nay in some cases he goes so far as to state that the leg has never been broken at all, and demonstrates the fact (?) upon a skeleton, he then further affirms that there has been a dislocation, which the surgeon has mistaken for a fracture.

Supposing our patient to be an intelligent person, this statement relating to the previous non-existence of a fracture will perhaps not be allowed; the charlatan is not at all nonplussed however, and suiting his words to his patient, he perhaps allows that there may have been a fracture, but he still stoutly maintains that "a bone is out," and until the dislocation is reduced the patient will not walk. The chances are that our patient submits to the bone-setter's treatment, and directly after the "bone is put in," is able to walk. Aye, and very often after going to the bone-setter's house upon crutches is able to get home without their help.

Now in cases of this sort, which are unfortunately of not at all unfrequent occurrence, the patient thinks that his medical attendant is a great fool, and that the bone-setter is a very clever fellow, and I must admit that the quack is in an instance of this kind the sharper man of the two.

Now in what has this bone-setting consisted? Merely this, by *sudden* and *forcible* movements adhesions in and around the stiff-joint have been broken, the rupture of which is accompanied, as a rule, by a sharp cracking-sound,* such as is produced when the metacarpo-phalangeal joints are extended, and which the bone-setter declares is the bone going into the socket.

There seems to me to be such a diffidence amongst many members of the profession as to what becomes of their fractures, or in other words many practitioners leave the after treatment of these injuries to nature, with a result not always very gratifying to the patient, if one may judge from the number of cripples both manual and pedal that one comes across every day, and it suggests to my mind either that there must, in spite of Hood, Howard Marsh, Adams, Bruce Clark and others, be very much ignorance on this particular subject existing in the profession, or else, that the majority of surgeons think it beneath them to study and imitate the bone-setter; if from the latter cause I trust this diffidence and false pride may be quickly set upon one side and as Sir James Paget† aptly put it, let us learn "to imitate what is good, and avoid what is bad in the practice of bone-setters." If we carry out this maxim, the bone-setter's occupation will be gone and surgery will be relieved from a heavy opprobrium. Let us then determine never to let a fracture or dislocation leave our hands until there is a right and proper use in the affected limbs, by doing this our reputation will be enhanced, and our conscience also made clear, for "what is worth doing at all is worth doing well."—So let this maxim guide us in our treatment and after treatment of injuries.

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* This sound is due to the separation of two adherent joint surfaces. Howard Marsh.

† *Loc. cit.*

CHAPTER II.

WHAT WE HAVE LEARNT FROM BONE-SETTERS.

Now although surgery has been in the habit of using manipulations in the treatment of stiff joints from time immemorial, the results were not encouraging, because they were principally used in impairment of mobility after disease, a class of cases in which unless very carefully selected, the means of cure may light up fresh mischief; and thus the profession has been deterred by the disappointing results from the full investigation of this treatment.

The bone-setter has, however, been more successful in his manipulations of certain classes of stiff joints, which I shall enumerate later on, and besides this, they have learnt from a large amount of practical experience, that there is generally in an injured joint, one particular spot upon which pressure causes acute pain, and "this fact has done more than anything to strengthen the popular faith in their intuitive skill;"* Dr. Hood has enumerated most of these spots, of which I append the chief with the lucid explanations of their occurrence given by Mr. Fox.

1. Over the head of the femur in the centre of the groin, corresponding to the ilio-femoral band of the capsular ligament, (which is most severely stretched when the thigh is over extended, as when the trunk is flung violently backwards, the commonest cause of a sprained hip).

2. For the knee-joint, at the back of the lower edge of the internal condyle, in other words, at the posterior border of the internal lateral ligament, where it blends with Winslow's ligament, and where the semi-membranosus tendon is in intimate relation with it. These parts suffer most because, as Mr. Morris says, "during extension they resist rotation outwards of the tibia upon a vertical axis, and a sprained knee is almost always caused by a twist outwards of the foot."

3. For the shoulder, at the point corresponding to the bicipital groove, because in nine cases out of ten a man sprains his shoulder to prevent himself from falling, his hand grasps the nearest

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* Mr. R. Dacre Fox, *Lancet*, vol. ii., 1882, p. 845.

support, the body is violently abducted from the arm, the long head of biceps is called upon to exert its utmost restraining power, the bicipital fascia is over-stretched, and the tendon very often misplaced.

4. For the elbow, in front of the tip of the internal condyle; the fan-shaped internal lateral ligament has its apex at that point, and it is most stretched in over-supination with extreme extension of the forearm.

5. For the ankle, on the front of the external malleolus, the apex of the plantar arch, and the tip of the fifth metatarsal-bone.

6. For the wrist, the styloid process of the ulna, and the annular ligament in front of the wrist.

The bone-setter's manipulations consist of firm pressure upon these painful spots, that is upon the part most injured, together with sudden movements of the joint, varied according to the situation.

That the lesser injuries do not receive sufficient recognition amongst us is a fact admitted by all and as Mr. Fox says, " I am sure that so-called *trifling* injuries deserve more attention at our hands, since living at the high pressure men do now-a-days, with every part of their bodies tested to its utmost capacity the slightest impairment of the mechanism of a limb must be an incalculable source of personal annoyance, discomfort or disability." The following may be cited as a case in point, Mr. Hulke relates,* that whilst in the Levant he fell over some rocks, and injured his knee, which became inflamed. The acute attack passed away and left him with a stiff joint, so that he could not walk without support. Falling one day, his knee was bent under him, and on rising he found that he had regained the full use of the joint, and could walk well without his supports. Here undoubtedly the synovitis occasioned by the injury had left adhesions, as first pointed out by Bonnet of Lyons and afterwards by Dr. Hood, which the sudden flexion of the knee joint broke asunder with an immediate good result. These are the classes of cases which make the successes of the bone-setters, as the cure is rapid and certain.

Now in cases of Pott's fracture, the ankle joint is injured more or less according to the severity of the accident, and consequently synovitis set up. Yet how many surgeons even now think of wrenching the patient's ankle, to set free the adhesions; as Mr. Heath says,* "no fracture should be considered cured until movement of the joint is completely restored, and were this thoroughly appreciated, many a case would be taken out of the hands of the bone-setters. The pain and stiffness are generally left to time, but in my opinion time *never* does cure them, and it is to be regretted that some of the most eminent surgeons should take the former view."

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* *Lancet*, vol. i., 1880.

But besides stiff joints subsequent to fractures, whether from simply being included in splints, or from implication in the original injury and consequent synovitis, there are other injuries to limbs which the bone-setter manipulates with success; viz., sprains, both recent and of old standing; stiff joints from simple synovitis; ruptured and dislocated tendons; joints, which subsequent to some injury to the parts around, have become stiff from prolonged rest; internal derangement of joints; ganglions either of carpus or tarsus; and joints stiffened by rheumatism.

Although ankylosed rheumatic joints can hardly come under the title of injury, yet the treatment of stiff joints from this cause in selected cases has been so successful in my practice, that I am tempted to include it, in the hopes of drawing more attention to the treatment of cripples from this disease.

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* *Lancet*, vol. I., 1880.

The joints which are benefited by so-called bone-setting are those, which, after injury, or some slight form of inflammation in or around, are cool, and free from any large amount of hydrarthrosis; or those which look sound, or around which the tissues are œdematous, the skin pale or rather dusky, not red, and in which there is limited movement with or without pain.

Provided there are no signs of active inflammation, pain increased on movement is a strong reason for using manipulation—especially when there is a "painful spot" generally on the inner side of the joint—the pain being increased by pressure.

CHAPTER III.

THE HARM THAT BONE-SETTERS DO.

Of course it cannot be wondered but that often a great deal of harm is done by the bone-setter manipulating joints which have become ankylosed from disease, and thus lighting up fresh mischief in the joints in his endeavours to put the "bone in," and besides this class of cases, they occasionally manipulate recent Colles' fractures, fractures of the neck of the thigh, and other impactions, with much discomfort and injury to the patient.

Cases which have been maltreated by the charlatan are very difficult to get an accurate record of, as generally the victims are ashamed of consulting a quack, and thus keep the matter quiet—on the other hand what a noise is made in the neighbourhood if the charlatan puts a "bone in," the grateful patient can never talk too much about it, abusing the members of our profession as a set of rogues and vagabonds.

Sir James Paget* gives an instance of a man with a well marked fracture of the lower end of the radius. "He had been to a distinguished bone-setter, who, with a glance at the wrist, said, 'You ha' put out your wrist, that's what you ha' done;' then violently stretched and moved the joint; then said, 'now you go and hold that under my pump,' and after the cold douche took his fee. The fracture being none the better for this treatment, was, at a second visit a few days later again wrenched, pumped upon, and paid for. But this time much pain and swelling followed; and the patient had the wisdom to call himself a fool and send for his usual medical attendant."

I have culled the following cases from the journals.

"A man slightly injured his wrist in some machinery. He went to work for some time, but found that his wrist was becoming stiff. He consulted an eminent 'bone-setter' who of course said it was 'out' and proceeded to manipulate it in the manner peculiar to himself. He was under the treatment (?) of this individual for some time, but got from bad to worse, and when I first saw him there was complete destruction of the wrist joint, with burrowing of pus up the arm, and great constitutional disturbance. Amputation had to be performed and the loss of an arm was the price this poor fellow had to pay for his over-weening confidence."*

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* *Op. cit.*

"A little boy fell down, no notice was taken of the occurrence for some days, when he began to walk lame and complain of pain in the hip. He was taken to a neighbouring hospital and treated for hip-joint disease. His parents not being satisfied with the rapidity of his progress, removed him, and took him to a 'bone-setter,' who of course told the old tale that the limb 'was out of joint,' and proceeded to reduce it. What this poor child suffered at the hands of this man was, from his father's description, something terrible to comtemplate. However, when I saw the boy, a few days after this occurrence, there was every symptom of hip-joint disease, with marked hectic. He is now, I believe, in an institution with disintegration of the joint."

"An old man fell downstairs, and hurt his shoulder, and afterwards found that he could not move it. He went to see a 'bone-setter,' who of course said 'it was out,' and taking hold of the limb by the wrist, 'soon made it go in with a crack,' so the old man said. He was brought to the workhouse here a few days afterwards, and on taking off his shirt, I found that the joint was covered with a large pitch plaster 'to strengthen it.' When this was removed, there was no difficulty in seeing that a dislocation still existed, and on examination I also discovered a fracture through the surgical neck of the humerus. I have no doubt that this was caused by the too excessive zeal of the 'bone-setter.' The luxation was reduced, the arm put up in splints, and the man has now perfect use of the joint."

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* *Lancet*, vol. i., 1883, p. 130.

"A patient,* over sixty, had cancer of his pelvic glands, he went to a bone-setter, who told him that his hip was out. The joint was 'put in' by wrenching, a form of treatment which greatly increased his sufferings and which he did not long survive."

"A child five years old, with a scrofulous knee, was put under the care of one of these gentry, the joint was 'put in' by very free movement. Acute suppuration followed, and amputation became necessary."

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* *Brit. Med. Jour.*, vol. ii., 1882, p. 665.

A little boy* was brought to Mr. Owen with early hip-joint disease, and whom the anxious mother was subsequently induced to take to a neighbouring "bone-setter." Of course a bone was "out" and had to be "put in." The mother was then told to go home and apply ice and, subsequently, iodine tincture to the hip. After this manipulation the disease went on apace, and subsequently excision of the hip-joint had to be performed.

A little girl was slowly recovering from strumous inflammation of the knee-joint, the leg being encased in a plaster of Paris bandage; her Sunday School teacher considered the progress to be too slow, and took the child to a "bone-setter." Acute arthritis followed his manipulations.

A boy was brought up from near Leamington. He had had the misfortune to have been under treatment by two rival "bone-setters" for fracture through the lower end of the humerus. The result of treatment by these charlatans has been to say the least unsatisfactory.

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* *Brit. Med. Jour.*, vol. ii., 1882, p. 763.

These are a few cases of the ill successes of the bone-setter, and they could be multiplied over and over again, but they are sufficient to show the misery which will often accrue to those who put themselves under the care of a quack, and I have no doubt that if we were able to collect together all the cases that have been treated by these charlatans, the evil and misery caused would far outweigh any good that may have occurred from their proceedings. But then the element of good is the only side seen by the public, and this only in an exaggerated and distorted form until a miracle appears to have been wrought, and thus the credit side of the account is apparently greater than the debit.

I cannot conclude this chapter better than by a quotation from an address by Dr. Wilks he says:—"All quackery has for its basis science falsely so-called, and it is because of this that uneducated persons are mostly influenced by those who purify the blood, or put fresh vitality into the nerves. I may say, moreover, that all quack systems, as well as the worst methods within the pale of orthodoxy, proceed upon the plan of treating symptoms."

CHAPTER IV.

THE UPPER EXTREMITY.

FRACTURE OF THE CLAVICLE.

I do not propose to consider the causes or diagnosis of this most common injury, but only wish to draw attention to the means of treating it. Every surgeon of course has his favourite method but I believe that there is no more satisfactory way of treating a broken collar bone than that proposed and practised by Professor Lewis A. Sayre of New York. It is the only one that I ever use, being perfectly satisfied with its results, indeed who could fail to be, seeing that when properly applied the results are, in most cases, perfect.

The following is a description of the method :—

1. A single layer of lint is placed in the axilla to prevent chafing.

2. A long strip of plaster three inches wide is taken, and one end is fixed to the middle of

the arm on the injured side, on the middle of the belly of the biceps by a turn round the arm, the plaster being *outside*, and then securing the short end to the strip by a stitch or couple of pins.

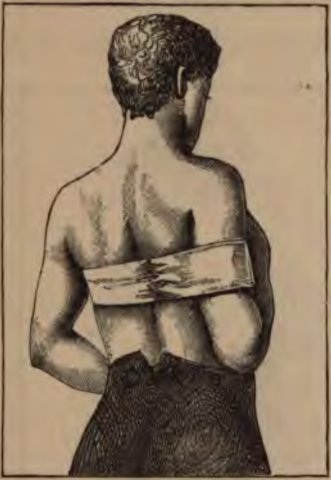

FIG. 1.—Strip of plaster applied, drawing back the arm beyond mid-axillary line.

3. The elbow on the injured side is drawn backwards to a little beyond the mid-axillary line, to put the pectoralis major on the stretch.

4. The strip of plaster is carried round the back across to the opposite axilla, and over the front of the chest, ending at the nipple on the injured side.

5. Put a little cotton wool over the olecranon on the injured side.

6. Another long strip of plaster of the same width, with a small longitudinal cut in it for the elbow, is taken, and one end is fixed to the acromion on the uninjured side, this is then carried down across the back to the opposite elbow, and drawn tightly over this and then upwards across the front of the chest to end at the acromion, where it commenced. If this manœuvre is properly executed the elbow on the injured side is

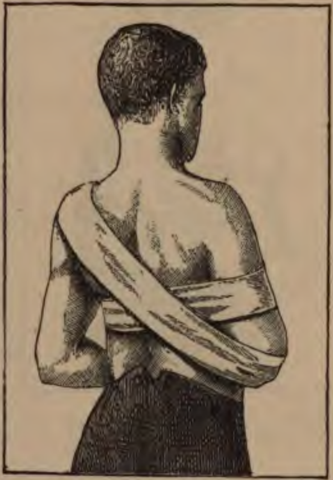

FIG. 2.—Back view of Sayre's apparatus for fractured clavicle, showing cross strap which raises the shoulder.

brought into the mid-axillary line, at the same time approximating the arm to the chest and thrusting upwards the shoulder.

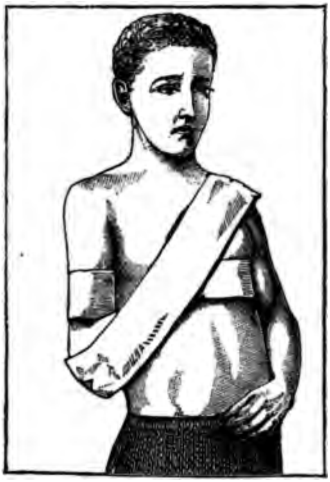

FIG. 3.—Front view of Sayre's apparatus for fractured clavicle, showing cross strap which raises the shoulder.

In children it is often advisable to put another broad-piece of strapping plaster all round the back and chest including the injured arm; or better still, a flannel roller, and over this a turn or two of plaster of Paris bandage.

If this method of treating fractured clavicle is properly carried out, in ordinary cases there will be no deformity left, as the bone will be found to have united in its right line, this is a result to be aimed at especially amongst ladies, a deformity of the collar bone being a great eye sore to them.

Now I do not advise that this bandage should be kept on for more than one month, and at the end of that time it should be removed. Even then a certain amount of stiffness of the joints included in the bandage will be noticed, and it is imperative at the time of taking down the arm, that these should be freely manipulated.

Begin with the fingers and work upwards.

The phalangeal and metacarpo-phalangeal joints of the fingers may be moved together, by grasping them in the right hand, and fixing the patient's metacarpus with the operator's left hand. The fingers should be *suddenly* flexed and as *suddenly* extended. This little operation should be done twice.

The joints of the thumb should now be moved in a like manner, the rest of the metacarpus being gripped by the surgeon's left hand. The carpo-metacarpal joint may be moved at the same time, and in the same manner, but in addition to flexion and extension a sharp movement of circumduction should be given to it.

The carpus comes next; in order to loosen the adhesions here, grip the wrist with the left hand on a level with the styloid processes, pressing the left thumb firmly upon the trapezium. Now grasp the patient's hand with your right as if shaking hands with him, and sharply flex and then extend the wrist joint. Do this twice and then as suddenly adduct, afterwards abduct the hand.

The elbow now claims attention; get the patient to sit down in a chair, and standing in front of him the surgeon should put up one of his feet upon the chair rail so that the operator's knee may form a rest for the patient's elbow. Grip the humerus above the condyles, the hand being at the back of the arm, and the thumb over the external or internal lateral ligament—(this varies according whether the arm operated upon is the left or the right one), at the same time pressing the elbow well down on the operator's knee. Now grasp just above the patient's wrist with the right hand, and *suddenly* flex the elbow to its full extent and then as suddenly fully extend it; these manipulations should be done twice. The arm being still gripped above by the left hand, the surgeon's free hand should grasp the patient's hand and sharply pronate and then supinate it.

The shoulder is the last joint now requiring movement.

The position of the operator differs according whether the right or left shoulder requires movement.

For the right shoulder the surgeon stands at the side and slightly behind the patient, who should be seated upon a chair. The operator fixes the trunk by grasping the shoulder over the outer half of the clavicle with his left hand, the fingers being in front, and the thumb behind. The patient's arm should now be gripped by the surgeon's right hand just above the condyles of the humerus.

The movement should now be made upwards and slightly backwards very sharply so that the lower part of the forearm and hand on the injured side are applied to the patient's head. The next movement should bring the elbow downwards and forwards to the front of the chest, and then sharply to the side, as in the position of "attention." In operating upon the left side, the movements are exactly the same, but the shoulder is grasped with the operator's right hand, whilst he manipulates the arm with his left one.

These directions for rendering stiff joints freely moveable, I shall refer to later on, as they are of course applicable to all those cases of impairment of mobility in joints of the upper extremity, which are susceptible of improvement by movement.

DISLOCATION OF THE HUMERUS AT THE SHOULDER-JOINT.

It is not my purpose here to enter into the diagnosis, differential or otherwise, of this injury, the subject being treated very exhaustively in all surgical text-books, but I should like to draw attention to the method of after treatment. I would here say *en parenthèse* that dislocations in this region are by no means unfrequently overlooked, as there is very often a good deal of swelling, which entirely masks the outline of the joint. That such may easily occur, the following cases which have come under the author's notice will show.

A lady, aged 63 years, tripped over the hearth-rug, and fell down upon her elbow, she afterwards complained of great pain in the shoulder running down the arm. Her medical attendant told her she had sprained her shoulder-joint, and gave her liniment to rub in. After about three months, the pain increasing very much, her friends advised her to seek other advice, and took her to a well-known London surgeon. He found, upon examination, a dislocation of the humerus, which was reduced much to the comfort of the patient.

A navvy at work upon the London and North Western Railway, a little way from London, fell down over a sleeper on to his left elbow. He went to a medical man in the neighbourhood, who *did not strip him* to examine him, but told him he had sprained his shoulder, and gave him a bottle of liniment to rub in. However, thinking all was not right the man took the next train to Euston, and applied for relief at University College Hospital. I saw the case, being house-surgeon there at the time, and found unmistakable signs of a dislocation of the humerus into the axilla.

The next case is interesting as two surgeons saw the case and yet failed to recognise the lesion. A woman, about sixty-five, addicted somewhat to alcoholism, came one evening into my consulting room, stating that three days previously she had fallen downstairs and hurt her face and arm, she came to me to give her something to "do her arm good." Upon baring her shoulders, the right (the injured one) was found very swollen the signs and symptoms pointing most unmistakably to a dislocation of the humerus. Upon feeling the sound (?) shoulder for the purpose of comparison I found that there was a dislocation on that side also. I then extracted the following history:—Some ten years previously, she had fallen down-stairs and hurt her arm, her medical attendant came and prescribed for her, but not being quite satisfied with his own opinion he called in a consulting surgeon, who saw her twice. They both failed to recognise the injury, and the humerus to the present day is unreduced.

It is the usual practice for surgeons when treating a dislocated shoulder after reduction, to bandage the injured arm to the side for about a fortnight and after that, to allow the patient to wear it in a sling, permitting little or no movement until a month has elapsed.

The method which I pursue and which I believe gives a more satisfactory result than that usually employed, is to keep the arm in a sling under the clothes for about three days, after this the sling may be worn outside the clothes and movements of the arm encouraged, abandoning the sling at the end of three weeks. Sudden and violent movement of the arm, especially in the direction in which it was previously luxated are to be avoided, as they may produce dislocation again. It is moreover a good plan for hunting men and others, who have received this injury, to wear a strap which keeps the arm well applied to the side. This strap should be worn when hunting for about a couple of months after the shoulder has been dislocated. Another very good plan in these cases, is to have the sleeve of the coat sewn to the side as far as the elbow, thus limiting the shoulder movement.

DISLOCATION OF THE TENDON OF THE LONG HEAD OF THE BICEPS.

This is an accident of somewhat rare occurrence, or perhaps from its liability to being overlooked by surgeons, is of more frequent occurrence than one might be led to suppose. Speaking of this accident, Sir James Paget in his *Clinical Lectures* says, that the injury "may be at least guessed at by the signs which Mr. Soden has pointed out in his case, related in the *Medico-Chirurgical Transactions;* the slight forward prominence of the head of the humerus, its drawing up under the acromion, and the pain at the lower end of the biceps on stretching it. As to this displacement, however, I doubt whether it would be ever so certainly made out as to be fairly reduced."

Mr. Dacre Fox* speaking of this injury states that there is accompanying it an overextension of the bicipital fascia, and that the accident is common in men who throw weights or use a shovel, as malsters and navvies.

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* *Lancet*, vol. ii., 1882, page 845.

There is a specimen of this injury in St. Bartholomew's Hospital Museum, and Mr. Soden's case referred to above, may be seen in the museum of King's College.

Hamilton is of the opinion that in those cases of dislocation of the shoulder, where, for a long time after reduction has been effected, the head of the humerus has been slightly advanced in its socket, so as to lead to a suspicion of improper reduction, are examples of the injury under discussion.

The method of treatment is to raise the arm over the head rotating it slightly inwards, and at the same time making upward pressure upon the misplaced tendon; when the tendon is reduced the arm should be bandaged to the side for three weeks, after which time movements may be allowed, care being taken for some weeks to restrict them in order not to reproduce the injury.

Now comes rather an interesting question. In those cases of forwards and upwards displacements of the humerus, which are supposed to be due to dislocation of the long head of the biceps, is it not very probable that the bonesetter in his manipulations may luckily reduce the injury, thus giving the patient ease and good movement in a joint which was before painful and in which the motions were somewhat restricted.

The following case, which is given in *Hamilton on Fractures*, certainly favours this view.

"Mrs. B., a well developed woman, of full habit, aged fifty-six, seven years since was thrown from a carriage, dislocating her right shoulder, which was reduced a short time after the accident, but the shoulder was painful and tender to the touch, and almost useless for months after. She could carry the arm forwards and backwards, but could not raise it from the side, or carry the hand behind her, or raise it to her head for fourteen months. She has gradually gained better use of her arm, but now, July, 1858, she cannot raise her elbow from the side more than half way to a horizontal position without assistance, but with assistance the arm may be carried into any position without pain or resistance. Measurement shows no appreciable difference in the size or length of the arm, or size of the shoulder, but the point of the shoulder is still tender to the touch, is prominent in front, and correspondingly flat behind. The head of the humerus appears to rest against the coracoid process, but the fulness of habit obscures the diagnosis, compared with other cases. Several doctors, at different times, have examined the shoulder; some have said it was not properly reduced, and advised a suit for malpractice. I examined the shoulder again in November last; it presented the same general appearance, although the patient was much thinner in flesh from recent sickness. Some six weeks previous to this examination in a sudden and thoughtless effort to raise the arm above the head the muscles unexpectedly obeyed the will; since which time she has had perfect use of it, though the deformity still remains. She thinks she felt or heard a snap when the arm went up, but it was followed by no pain, soreness, or swelling."

Erichsen* describes under traumatic paralysis of the circumflex nerve, symptoms exactly corresponding to those given as due to dislocation of the long head of the biceps, and in describing the treatment directs the reduction of "the subluxation of the bone under chloroform," and after this has been done restoration of the action of the deltoid by friction, douches, and galvanism.

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* *Science and Art of Surgery*, 7th edit., vol. i., p. 902.

INFLAMMATION OF THE BURSA UNDER THE DELTOID MUSCLE.

The sub-deltoid bursa is very liable to become inflamed after an injury to the shoulder, such as in a fall from a horse, the shoulder striking on the ground; or from a direct blow upon the joint. The symptoms are greater protuberance of the deltoid muscle, whilst the humero-pectoral groove is not obliterated, together with crepitation and great pain increased on movement. This latter symptom lasts for several weeks, and even years, if the nature of the injury is not recognised. Adhesions take place around the shoulder and in the joint itself if this has been injured. These adhesions cause intense agony whenever the limb is moved. The treatment of these cases by forcibly manipulating the joint is most successful. The following case of Mr. George Moore, as related by Dr. Smiles,* is, I think, undoubtedly a case of this kind. He relates :—

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* *George Moore, Merchant and Philanthropist.* By Samuel Smiles, LL.D. p. 272 *et seq.*

"In March 1867, he met with an accident which put a stop to his hunting. The meet was at Torpenhow. From thence they went to the top of Binsey, a heathery fell, to the south of Whitehall. There they found a fox, and viewed him away. Always anxious to keep with the hounds, Mr. Moore rode fast down the hill. But his bay mare got her foot into a rabbit hole, and the rider got a regular cropper. He found that his shoulder was stiff. Nevertheless he mounted again, and galloped away.

The hounds were in full cry, he kept up pretty well, though his shoulder was severely hurt.

Shortly after he consulted a celebrated surgeon at Carlisle about his shoulder.

The joint was found 'all right,' though the muscles were pronounced to be strained and hurt.

While he was Prime Warden,* he was suffering from intense pain in his shoulder, caused by his accident in the hunting field in March, 1867. He had consulted the most eminent surgeons.

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* Of the Fishmonger's Company.

They could find no cure for the pain in his shoulder. Some called it neuralgia, others rheumatism. Some recommended a six month's sea voyage; others strapped up his shoulder with plasters, and told him to keep his arm in a sling. At length the pain became unbearable. Sometimes the shoulder grew very black.

He called in one of the most eminent surgeons in London; but as Mr. Moore writes 'he did not understand my shoulder.' Another surgeon was called in, and still another; but the result was the same. 'The shoulder,' he says, 'is not so black as formerly, but the pain is more acute.' A few days later he says, 'the neuralgia came on fearfully all day, and at night I was in torture. Mrs. Moore rushed off in the brougham to fetch Dr.—'that he might see my arm at the blackest,' still nothing could be done.

At length he could bear his pain no longer. He had been advised to go to a well known bone-setter. No! he would not do that, he had put himself in the hands of the first surgeons of the day, why should he go to an irregular practitioner? At length, however, he was persuaded by his friends.

As the surgeons had done their best, why should he not try the bone-setter?

He called upon Mr. Hutton at his house. He looked at the shoulder, 'well he would try and put it in,' this was new comfort. Mr. Hutton recommended his patient to buy some neat's-foot oil, and rub it in as hot as he could bear it.

'Where can we buy the stuff?' asked Mrs. Moore. 'You can take a soda-water bottle and get it at a tripe shop in Tottenham Court Road.' 'We have not got a soda-water bottle with us.' 'You can get one at the corner, at the public house.' 'You might get it at a druggist's,' he continued, 'but he will charge you three times as dear.'

The neat's-foot oil was at last got; the shoulder was duly rubbed with it, and the bone-setter arrived at Kensington Palace Gardens to do his best or his worst. He made Mr. Moore sign a paper before he proceeded with his operation, in which he agreed to be satisfied whether failure or success was the result!

Hutton took the arm in his hand, gave it two or three turns, and then gave it a tremendous twist round in the socket. The shoulder joint was got in.

George Moore threw his arm out with strength straight before him, and said 'I could fight,' whereas a moment before he could not raise it two inches. It had been out for nearly two years.

Mr. Moore was no more troubled with his shoulder."

FRACTURE OF THE TIP OF THE OLECRANON, AND SEPARATION OF THE INTERNAL EPICONDYLE OF THE HUMERUS.

I believe that these injuries are, owing to swelling of the part, occasionally overlooked, certainly they are rather rare, and perhaps on that account have not received much notice.

Fracture of the tip of the olecranon may occur in two places. 1. The extreme tip may be broken off. 2. Fracture may occur midway between the base of the process and the tip, corresponding to the insertion of the triceps muscle.

Cases of fracture involving only the extreme tip of the olecranon are due to direct violence, and are produced by a fall on the elbow when this joint is in a state of extreme flexion.

Malgaigne[*] states that he has only been able to find record of two cases of this injury, and further says that they were both occasioned by muscular action. But it will be remembered that the posterior ligament of the elbow joint is attached to the edge of the olecranon and between this and the triceps tendon there is a bursa; so that how muscular action comes in here as a cause of the accident I fail to see.

The second class, viz., those occurring between the tip and the base of the process, is produced by the muscular action of the triceps, but these cases are very rare, though one would be led to suppose, from the analogy between the patella and the olecranon, that they would be of more frequent occurrence. The displacement in these instances is often very great, the upper fragment being drawn up by the contracted triceps. It occasionally happens, however, that the expanded tendon of the triceps is not ruptured, and in these cases there will be little separation of the fragments.

It is usually stated that these fractures do not unite by bone, but there is plenty of evidence to

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[†] Hamilton *On Fractures and Dislocations*, p. 324.

show that a bony union may occur, and every endeavour should be made to attain this end.

The upper fragment should be drawn down and fixed in its proper position by a piece of strapping plaster, the elbow being in the position of nearly full extension, and over this a plaster of Paris bandage should be evenly applied from the wrist up to the axilla. After wearing this apparatus for a month, it should be removed and the elbow manipulated. The method of applying the plaster of Paris bandage I shall speak of fully later on, when considering fractures in the vicinity of the ankle-joint.

The method of moving the elbow in cases of this kind, differs slightly from the directions given before, though the object to be attained is the same, viz., breaking down the adhesions which have formed in and around the elbow-joint.

The left hand should grip the arm tightly just above the condyles of the humerus, the little finger pressing down as much as possible on to the tip of the olecranon, the right hand of the operator then grasps the wrist and by a series of sharp jerks fully flexes it upon the humerus.

After this the arm should be worn in a sling for a fortnight or three weeks, the patient being encouraged to move the elbow-joint, but heavy lifting, throwing, and all violent contractions of the triceps should be avoided for the space of at least two months after the accident.

SEPARATION OF THE INTERNAL EPI-CONDYLE, OR SUPRA-CONDYLOID EMINENCE.

This accident generally occurs in children, for it will be remembered that this process does not unite to the shaft until about the 18th year. The accident is due to direct violence and may be complicated with other injuries in or about the elbow-joint.

The symptoms of this injury when uncomplicated are swelling, very marked over the region of the internal condyle, and upon careful palpation, the absence of the tip of the condyle may be generally made out, the fragment being drawn downwards and forwards by the muscles attached to it. In addition there are sometimes present some indications of injury to the ulnar nerve.

The following two cases illustrate this accident in its simple form.

1. C. S., æt. 11, whilst at play fell down in the gutter, striking the internal condyle of the left arm upon the edge of the kerbstone. He was brought immediately to me, and upon examining his arm I found the tip of the internal condyle was broken off, and drawn forwards.

2. J. R., æt. 13, whilst swinging at a Forester's Fête, was thrown to the ground, which was extremely hard owing to a prevalence of dry weather, and struck the inner condyle of his left arm. When seen there was very considerable swelling on the inner side of the arm, just above the elbow-joint, but on careful manipulation separation of the tip of the condyle was easily diagnosed.

The treatment I adopted in both cases was to put the injured limb up in plaster of Paris bandages for a month, the elbow being flexed; afterwards moving the elbow-joint in the manner described on page 25. In each case there was capital union of the fracture, together with complete movements in the elbow-joint.

DISLOCATION OF THE HEAD OF THE RADIUS FORWARDS.

This is an accident which is very often said to be of rare occurrence, but Hutchinson* states that it "is not very rare, but when it does occur is almost always attended by fracture of the ulna," so that from this we must conclude that he regards the uncomplicated lesion as rare.

Boyer† states that it cannot occur without an accompanying fracture; whilst Erichsen says that it is the most common dislocation of the radius alone, and this view is upheld by Hamilton. Another feature of this accident is, that it often escapes observation, Malgaigne having met with six cases unrecognised out of twenty-five, and Hamilton with six cases which were not reduced, three of which had not been recognised.

The accident may be due to a fall upon the head of the radius driving it directly forwards, or more commonly from a fall upon the palm of the hand. It will be noticed that when produced by a fall upon the hand, this lesion generally occurs in young people, as fracture (Colles) will more likely occur in older persons.

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* *Medical Times and Gazette*, vol. i., 1866.

† *Traité des Maladies Chirurgicales*, 2nde ed., tom. iv., p. 239.

The signs of this dislocation are forward displacement of the head of the radius; depression below the capitellum of the humerus; pain upon rotation; imperfect supination, but full pronation; locking of the elbow joint when flexed, the head of the radius coming in contact with the front of the external condyle of the humerus; and lastly but by no means least, the "essential phenomenon" described by Malgaigne, viz., the oblique inclination of the outer side of the forearm outwards. Chloroform is often a useful and necessary adjunct in the diagnosis of dislocations and fractures about the elbow joint, especially where swelling masks the outline of the joint; as indeed it is in all cases of difficulties in the diagnosis of joint injuries occurring elsewhere.

The reduction may generally be affected by making extension from the wrist, and counter extension from above the elbow, the latter joint being extended; the forearm is then flexed upon the arm, at the same time the head of the radius is pushed into its proper position with the thumb of the hand used in counter extending. After reduction has been affected the arm may be put up in plaster of Paris in a position midway between pronation and supination. The splint should be removed at the end of a fortnight and the arm moved as directed on page 25. After this has been done, the arm should be slung for another fortnight, movements of the joint being made every day.

Incomplete dislocation forwards of the head of the radius always takes place in children, and is very liable to be overlooked.

This accident is always produced by forcibly pulling the hand, as lifting a child up from the ground with one hand, or when a child is about to fall, attempting to keep him up by holding on to his hand. The signs of this accident are the same as the preceding, except that the "essential phenomenon" of Malgaigne is absent. The inability to flex the elbow beyond a right angle is very characteristic of this injury, and the little patient will be unable to touch the shoulder with the tips of the fingers.

The following case is an illustration of this injury.

M. M., æt. 4½ years, was playing in the garden, when one of her father's pupils pulled her up from the sitting posture by her left hand. Immediately after the child began to cry. Not much notice, however, was taken of the occurrence at the time, but the child kept on crying, indeed she did not sleep at all that night, complaining of her arm. The next day I saw her, and found the forearm in a state between pronation and supination, with inability to flex the elbow beyond a right angle, and great pain upon manipulation, there was very little swelling, so that the head of the bone was easily felt rolling under the finger in front of the external condyle, whilst there was a slight depression in the position the head of the radius usually occupies.

Reduction was easily affected in the manner above described, and the limb was put in plaster of Paris. The splint was kept on for about twenty-six days as the mother took the patient away on a visit, and stayed longer than she expected.

Upon taking off the plaster, there was very fair movement in the joint, except that supination and extension were somewhat restricted.

I manipulated the joint in the manner previously described, and since then there has been no further trouble, the limb being painless and its movements perfect.

LAWN TENNIS ELBOW, AND LAWN TENNIS ARM.

These accidents have necessarily only been described lately, though unfortunately there is plenty of evidence that these lesions in the upper extremity are of by no means uncommon occurrence, and as tennis seems every year to become more popular so must these accidents increase in number.

Lawn Tennis Elbow consists in acute pain of the external condyle of the humerus, together with some swelling of the joint, due to synovitis.

According to Dr. Innes* the injury is due to the head of the radius constantly jarring against the condyle during play. The obvious treatment is to abstain from the game until the symptoms have subsided, or, if the swelling is sufficiently severe, to apply pressure by means of strapping the elbow joint and to sling the arm for a week or ten days, after which time manipulation of the joint should be freely practised.

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* *Lancet*, vol. ii., 1882, p. 201.

Lawn Tennis Arm. This term sometimes includes the injury just described, but is more usually applied to a dislocation of the pronator radii teres muscle. The condition was first described by Callender* and afterwards by Morris.† These injuries are practically little known, yet these small details of surgery are frequently followed by considerable inconvenience, interfering as they do with the very amusement in the following of which the hurt has been received.

The cause of the accident is the arm being rapidly and forcibly pronated during the back stroke, so frequently practised by lawn tennis players.

There is intense pain in the forearm, with tenderness and swelling along the course of the pronator radii teres muscle, the pain being increased on pronating the hand.

The treatment consists in fully supinating the forearm, then, making firm pressure along the course of the dislocated muscle, sharply bringing the hand into full pronation.

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* Callender. *Brit. Med. Jour.*, vol. ii., 1878.

† *Lancet*, vol. ii., 1882.

After this little manœuvre the pain will be found to have ceased. Strips of strapping plaster should then be evenly applied to the forearm, and tennis should be interdicted for a few days. It is advisable for the patient who has had this accident, to wear, when playing, an elastic armlet made of similar material to an elastic stocking, extending from the wrist to the elbow, for the accident is very liable to recur.

This same lesion has also been noticed in racquet players who practice the back stroke.

STONEBREAKER'S ARM.

This is a sprain of the extensors of the thumb, and is found amongst stonebreakers, especially those working on very hard stones. The following case recently occurred in my practice, and illustrates the injury.

C. J., a very muscular man, aged twenty-eight, for some three years has been employed breaking stones on the road, principally those of a very hard variety known as Hartshill. He came to me one day complaining that he was unable to do his work owing to a pain in his right arm. There was slight swelling and a good deal of tenderness over the three extensors of the thumb, together with a good deal of aching pain, which was increased by movement. A splint was applied to the front of the forearm, extending to the heads of the metacarpal bones and the arm firmly bandaged. After a rest the arm was very much better and the man on his own responsibility took the splint off and commenced work. The same night he came again to me with the symptoms as severe as before. I re-applied the splint, and after a fortnight the man was able to work: nor has he found any further inconvenience.

STONEMASON'S THUMB.

This is a severe sprain of the carpo-metacarpal joint of the thumb. It generally occurs, as its name implies, in stonemasons and is due to the jar of the heavy chisels they use. I have also seen it occur in carpenters from the same cause.

The symptoms are slight swelling at the

carpo-metacarpal joint; and aching pain, increased by movement. The treatment consists in resting the joint, which is best attained by strapping it, and in about three weeks' time the joint should be freely manipulated, as the injury is doubtless a synovitis of the joint which will subside with rest, but which will require movement before the patient is able to work.

SPRAINS OF THE THUMB.

The thumb from its position is very liable to sprains from falling upon it when extended, as in endeavouring to save oneself, or from a blow upon its end. There is very often a good deal of swelling if the sprain is a severe one, and dislocation of the carpo-phalangeal joint must not be overlooked; especially if it happens to be one of those cases, where instead of the prominent phalanx being found standing at an angle, it is extended almost in a straight line upon the metacarpal bone.

The treatment to be adopted is rest, best promoted by carefully applying strapping plaster, and in about a week or ten days' time free manipulations of the joints of the thumb must be practised, the movements being sudden and sharp, as before directed.

COLLES' FRACTURE

This injury was first described by Colles in 1814, who stated that it was often mistaken for a mere sprain; and even now cases are not at all uncommonly occurring, where owing to the impaction of the fragments and consequent absence of crepitus, the fracture is overlooked.

The cause of this injury is a fall upon the palmar surface of the hand, the wrist-joint being thus over-extended, and the forearm in a position midway between pronation and supination, fracture of the radius takes place somewhere between half an inch and an inch and a half from its lower end, the upper fragment being impacted into the lower one. The accident gives rise to a well-marked deformity, which, when once seen is probably never forgotten. The general contour of the arm and hand resembles somewhat in appearance the back of an ordinary dinner-fork. There is a considerable prominence on the back of the hand just above the carpus, which is due to the lower fragment being displaced upwards and backwards, carrying the carpus with it, and just underneath this on the radial side of the arm there is a hollow, whilst on the anterior and lower part of the forearm there is another rounded prominence due to lower end of the upper fragment forcibly pronated by the two pronator muscles. The hand is abducted, and the styloid process of the ulna projects considerably, the forearm being shortened on the outer side.

The satisfactory treatment of these fractures has occupied many surgeons, and Erichsen* states that "it is often fully three months before stiffness of the hand and wrist is so far diminished, even by the use of friction and douches, as to enable the patient to use the fingers."

The number of splints, and various ways of treating this lesion are very numerous from the old pistol splint of which illustrations are given in most text-books, to the more modern and somewhat complicated one of Gordon.

One of the great elements in treating fractures is simplicity, and I shall now describe a splint for the treatment of Colles' fracture, which has the advantage of being very simple, and at the same time is most efficacious.

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* *Science and Art of Surgery*, 7th edit., vol. i., p. 423.

When I was house-surgeon at University College Hospital, Mr. Heath placed in my hands a pair of these splints which he had just received from Messrs. Krohne and Sesemann who had lately imported them from America. I was so pleased with the results obtained with these splints, that since that time I have used no other description for this injury, nor do I desire any better one, as the results obtained are *perfect*, when they are properly applied.

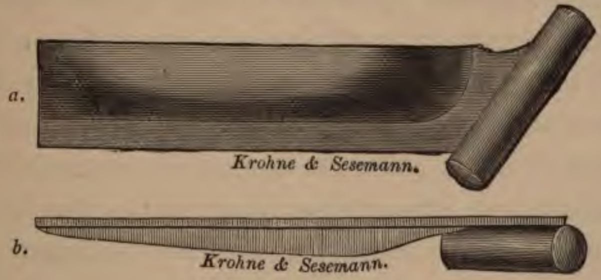

FIG. 4.

a. Carr's splint for the right hand.
b. Side view of same, shewing "bed."

Carr's splint consists of a strip of wood about a sixth of an inch in thickness, two inches wide, and about a foot long, on this is fastened a carved wood "bed" of a form exactly adapted to the concavity of the lower side of the radius. A cross-bar four inches long is attached to the distal extremity obliquely. The splints are made in pairs. A small dorsal splint is supplied with them, I have however for some time discarded this as unnecessary.

For the satisfactory treatment of Colles' fractures with these splints, the surgeon should in all cases first reduce the fracture by extension, and flexion of the wrist. Having selected the splint for the side injured, the forearm is laid upon it, so that the cross-bar corresponds exactly with the metacarpo-phalangeal articulations.

The patient is then instructed to grasp the cross bar firmly, being assisted in this effort if necessary. A piece of strapping plaster about an inch wide should now be applied to the hand and splint just above the metacarpo-phalangeal joints, of course leaving the thumb free. Another similar piece of plaster may then be applied to the forearm about its middle, and then a bandage laid evenly over the whole. By this means the fingers and thumb will be left perfectly free, and the patient should be instructed to move these frequently every day to prevent stiffness. The splint should be kept on about a month, and at the end of that time the fracture will be found to have united without any deformity and without that bugbear to surgeons, stiffness of wrist and fingers.

To recapitulate, the following two points must be carefully attended to in order to insure success.

First, the fracture must be properly reduced before applying the splint.

Second, the patient must make frequent movements with the fingers grasping the cross bar tightly and then relaxing the hold, as well as moving the fingers as if he were playing the piano. The action of the muscles, in the effort to grasp the cross bar, is the most material help towards a result without deformity.

The arm should be slung, but such is the efficacy of the splint that it may be taken out of the sling at meal times and the fingers used for holding a fork, spoon, &c., and if the right hand be injured, writing is not only possible but very useful as a means of moving the fingers.

The following cases under my care at University College Hospital, were published in the *British Medical Journal*;* I have treated many cases since in a similar manner, with a satisfactory result in every case.

A lad, aged nineteen, fell off a van, and sustained a Colles' fracture of the right radius—Carr's splint was applied. Four weeks after the accident, the splint was removed. The fingers were perfectly moveable, as was also the wrist, and there was no deformity.

An engine driver, aged thirty-two, applied to the Hospital for relief, suffering from Colles' fracture on the right side—Carr's splint was applied. The result was the same as in the former case.

A boy, aged eleven, fell off the parallel bars at a gymnasium, and sustained a Colles' fracture of the right radius, together with fracture through the lower ends of the radius and ulna on the left hand. The fractures on both sides were treated with Carr's splints. At the end of a month there was neither deformity nor stiffness.

A lady, aged fifty-six, slipped down outside the Hospital, and was brought in with a Colles' fracture of the left radius. The case was treated with Carr's splint with a satisfactory result.

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* *Brit. Med. Journal*, vol. I., 1881.

To sum up, the splint is simple, most easily applied, is very comfortable, gives perfectly satisfactory results, and the patient is not precluded from feeding himself, writing, etc., during its application.

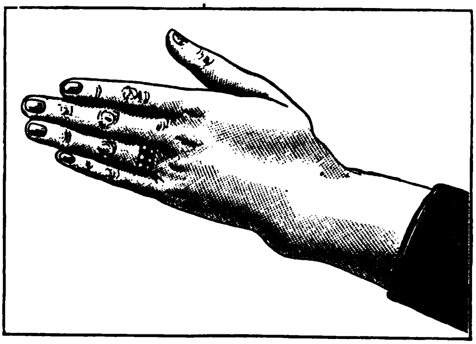

FIG. 5.

Colles' fracture, badly set, from a photograph taken ten years after fracture. The characteristic deformity is still very marked.

The above illustration is one of a very badly set Colles' fracture which could not have occurred had Carr's splint been used. In cases like the above I should propose to divide the radius just above the root of the styloid process, and put up the arm in a Carr's splint.

DISLOCATION OF TENDONS ABOUT THE WRIST-JOINT.

The extensor tendons as they pass over the wrist-joint are occasionally displaced, the tendons of the extensor indicis or primi internodii pollicis are those most commonly dislocated. The diagnosis is very easy, as the tendons are superficial. The symptoms are aching pain, much increased on extension, and some tenderness along the course of the injured tendon. The reduction is very easy, but after this has been done some strips of strapping plaster should be applied for about a fortnight. Unless this is attended to, the dislocation is apt to recur, as I myself can testify, having suffered more than once with a slipping of the tendon of the extensor primi internodii pollicis.

TENO-SYNOVITIS.

Inflammation of the sheaths of tendons generally occurs about the wrist-joint, but the ankle tendons may similarly suffer.

In the former position it is due to over exertion of the muscles of the forearm, such as in rowing men, especially during "feathering" the oar, in washer-woman due to wringing clothes, and in musical young ladies due to long practising at the piano with the wrist below the level of the key-board. The symptoms are slight swelling along the course of the extensor tendons, with stiffness and pain on movement, or in the severer cases this may be present even when the tendons are at rest, there is also present a peculiar rustling the *ténosinite crépitante*, or *crépitation dolouresse*, of the French authors. The treatment consists of rest for the first week or so, best secured by strapping the joint. Later on sharp manipulations of the wrist will generally finish the case.

CHAPTER V.

THE LOWER EXTREMITY.

STIFF HIP-JOINT.

The hip-joint may become stiff from various causes; excluding hip-joint disease, fractures, dislocations and rheumatism, the principal causes are enlargement and perhaps suppuration of bursæ in the neighbourhood, sprained hip, and hysterical hip. The bursa under the psoas muscle may be enlarged and simulate disease of the hip-joint, and the bursa over the head of the great trochanter is liable to become enlarged, and suppurate, from a fall or from camping-out, the patient not being used to sleeping on hard ground. These cases must not be confounded with hip-joint disease for the treatment of stiffness in the joint from the former causes is free manipulation, whereas it would obviously aggravate the latter disease.

In the case of enlargement and inflammation of the bursa under the psoas and iliacus tendon pressure upon the obturator nerve may cause pain in the hip and knee-joints, and will require very careful diagnosis.* Negative signs will here be valuable, the joint will not be affected at its posterior and outer part; there being no pain, swelling, or tenderness behind the trochanter; there will not be flattening of the nates; and there will be absence of obliquity of the pelvis.

The best way of manipulating the hip-joint is, having fixed the pelvis, to grasp the limb at the ankle and just below the knee, flexing this joint, the hip should then be flexed by a series of sharp and sudden jerks, when fully flexed, rotated in and out, and finally suddenly extended.

SIMPLE FRACTURE OF THE SHAFT OF THE FEMUR.

The satisfactory treatment of fractures of the shaft of the femur, has occupied the attention of surgeons from Hippocrates downwards, John Bell states that "the machine is not yet invented, by which a fracture of the thigh-bone can be perfectly secured," and Benjamin Bell in his *System of Surgery,* writes that "an effectual method of securing oblique fractures in the bones of the extremities, and especially of the thigh bone, is perhaps one of the greatest desiderata of modern surgery."

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* **Occasionally this bursa is in communication with the hip-joint, and synovitis may be set up, starting in the bursa.**

Later on Nélaton gives it as his opinion that a fracture of the body of the femur, in an adult, is always a grave accident, inasmuch as it demands so long a confinement to the bed, and especially on account of the shortening of the limb, which it is almost impossible to prevent; accordingly Boyer recommends to the surgeon, from the first day to announce to the parents of the patient the possibility of this accident. With infants, on the contrary, it is almost always easy to avoid the shortening.*

To come down to our own day, we find the following quoted on this subject in a leading text-book on surgery. "Whatever treatment is adopted, and however carefully it may be carried out, the surgeon must not be disappointed if in the adult, a certain amount of shortening be left.

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* *Elémens de Pathologie Chirurgicale,* par A. Nélaton, tom. I., p. 752. Paris, 1844.

This is more particularly the case where the fracture is oblique and high up; the more transverse, and the nearer the condyles, on the other hand, the less will be the liability to shortening."*

Whatever mode of treatment the surgeon selects, his endeavour to "set" a fracture of the shaft of the femur, whether he incline to the old fashioned Liston's long splint, or to the more modern adaptation of Thomas's knee splint, or whatever other method he may have a fancy for, there are two principal obstacles he must overcome, if he wishes to get a good result, these are shortening of the limb, and rotation outwards of the lower fragment.

The shortening, if it exceeds a half or three quarters of an inch, becomes a serious deformity, whilst if the rotation outwards of the lower fragment is allowed to go uncorrected, a nearly useless limb results to the patient, in consequence of the knee and ankle movements of the injured limb being in a different plane to those of the sound one.

The treatment of fractures of the shaft of the femur in infants and young children is generally easy and very satisfactory.

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* *The Science and Art of Surgery*, By John Eric Erichsen, 8th edition, vol. i., p. 600.

They may be treated either by a Hamilton's double thigh splint, or perhaps even more conveniently by the immediate application of the plaster of Paris bandage. In applying the plaster of Paris treatment to infants and young children, it will greatly assist the application of the splint to put the patient under the influence of chloroform. The following will be found a convenient method of applying this means of treatment.

The child having been completely anæsthetised, is placed on a table, with the legs and pelvis projecting over the edge. An assistant makes extension by holding a foot in each hand, whilst another assistant makes counter extension by holding the child under the axillæ from above. The surgeon having satisfied himself that the fractured limb is in good position, proceeds to envelop the whole of the injured leg, from the toes upwards in a flannel roller.

When the hip-joint is reached, the roller should be continued round the pelvis in the form of a spica bandage, taking care to well cover the perineum and the ischial tuberosities, so as to make a broad belt of flannel all round the pelvis.

Over this flannel, muslin bandages impregnated with plaster of Paris, must now be carefully *unrolled* and applied.

It is necessary to put a few extra turns in front of the groin where the splint is most liable to be broken, or if preferred a strip or two of tin, may here be included in the bandage in order to strengthen this part. The foot and ankle should be included in the plaster, care being taken that the foot is held at right angles to the leg during its application.

After the plaster has set, it will be found convenient to size and afterwards to varnish the inner side from the perineum to the knee, in order to prevent the destruction of the splint, from its getting soaked in urine.

Children from four years old and upwards, may be allowed to get up on crutches about the third day after the application of this splint, having first taken the precaution of putting a patten upon the boot of the sound leg. The plaster should remain on from a month to six weeks, according to the age of the child. When it is removed, the surgeon should satisfy himself that there is perfect movement in all the joints which have been included in the bandage.

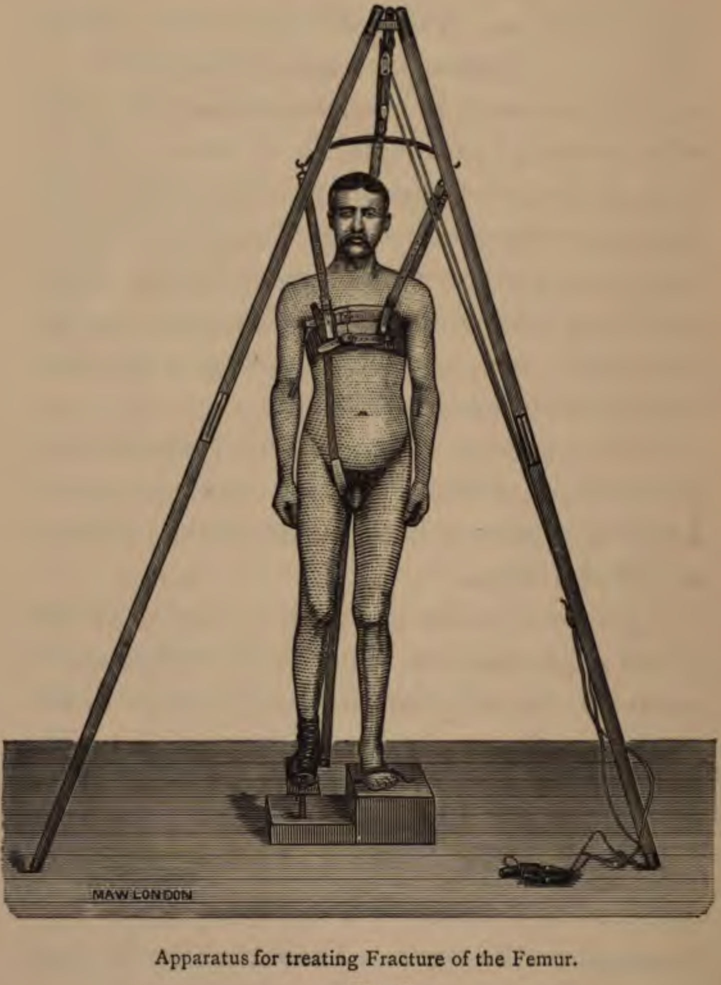
The satisfactory method of treating fractures of the thigh in children by the means just narrated, has led me to apply it to adults, and I find in the last edition of Erichsen's *Surgery*, Mr. Beck states that "with such an apparatus I have treated many fractured thighs, both in adults and in children, without any confinement to bed for more than three or four days, and with little if any shortening or deformity being left."

Now I think it will be admitted by all, or at any rate by those who have used, or witnessed, this method of treatment, that it is one of the most satisfactory means we have at our disposal for treating fractures of the shaft of the femur. Here we have a patient suffering from a most severe injury, yet able to get about on crutches within a week of the accident, and this too, without any appreciable shortening or deformity.

In adults the difficulty lies in its satisfactory application. It is very easy to apply extension and counter extension to a child, and then to put on the plaster, but how different it is when we have to deal with a fracture in a muscular man. These difficulties can only be appreciated by those who have attempted it. It is difficult enough in hospital practice with a staff of experienced assistants: how much more so must it be then in private practice, where often the surgeon has to act alone. This difficulty, however, I have overcome, and by using the apparatus which I have devised the surgeon can, unassisted by experienced aid, put up a fractured femur expeditiously and easily.

The apparatus which I have contrived is a modification of Sayre's suspension apparatus for applying plaster of Paris jackets in the treatment of spinal disease.

A reference to the illustration will give an idea of the apparatus, which has been manufactured for me by Messrs. Maw, Son and Thompson, who have carefully carried out my instructions. The apparatus consists of a tripod with a cross bar and pulleys similar to Sayre's, the counter extension is made from the axillæ by means of a broad padded leather chest belt, and by a perineal band fastened to the same. The extension is made from the foot by means of a boot fastened to an



Apparatus for treating Fracture of the Femur.

FIG. 6.

iron foot plate, which rotates by means of a screw, and which can also be extended by similar means. The sound leg rests upon a step formed by the box, in which all the apparatus except the tripod will easily pack.

The method of using this apparatus is as follows:—

Whilst the patient is lying down, the belt can be applied to the chest, and the step being placed under the centre of the tripod, the patient is carefully lifted so as to rest his *sound* foot upon the step, leaving the injured one hanging over the side, but being held steady by an assistant. The cross bar is now lowered and attached to the chest belt by means of the straps, and then by pulling the cords the patient is to be supported, but not raised from his sound leg.

The foot piece being raised to its full height, is now fastened on to the foot of the injured limb, by means of the boot, which has been previously fastened to the lid of the box by thumb screws. Should there be any rotation outward of the lower fragment, this can be remedied by rotating in the boot, to the sole of which is fixed a screw arrangement for this purpose.

Having got the foot into position, with plenty of extension, the length of the two limbs should be measured from the anterior superior iliac spine, to the lower border of the patella, and any shortening may be remedied either by tightening the perineal band, or by the extension screws attached to the foot plate.

When the limb is judged to be in accurate position, a roller of flannel should be applied to the limb and pelvis, padding the ischial and femoral tuberosities with a little cotton wool.

The flannel should be begun just above the boot and carried well over the pelvis.

The plaster should now be carefully applied over the flannel. In order to strengthen the part over the groin and at the seat of fracture, strips of tin should be included in the bandage over these parts. When enough plaster is judged to have been laid on, and the splint is well set, the foot piece and perineal band may be removed, and the patient laid in a recumbent position, care being taken not to break the newly set plaster.

The perineal band should be removed by unbuckling it from the chest belt, and then drawing it downwards.

When the patient has been laid down, an assistant should hold the foot at right angles to the leg, and the surgeon having enveloped it in flannel, puts on a plaster of Paris boot.

It is necessary to include the foot and ankle in the plaster of Paris, in order that we may avail ourselves of this most reliable means of keeping up extension, for as the limb will naturally shrink from disuse, the condyles and muscles of the calf will offer but little resistance to the action of the strong muscles of the thigh, and more or less shortening of the limb will consequently ensue.

This immobile apparatus should be worn for about six or seven weeks, the patient meanwhile getting about on crutches, having a patten, about four inches high, placed on the boot of the sound leg.

After removal of the plaster, care must be taken to see that all the joints which have been included in the bandage are perfectly mobile. Those which are stiff should be freely manipulated at the time of taking off the splint.

This means of treating fractures of the shaft of the thigh, will I am convinced give a greater degree of comfort to the patient than any other method, and at the same time be creditable to the surgeon, as, the limb having been well fixed in a good position, shortening and rotation outwards of the lower fragment cannot possibly occur.

Its easy application by the suspension apparatus described, will I trust be appreciated by surgeons, and more especially by those who have not a large staff of experienced assistants at their command.

RIDER'S SPRAIN.

This consists in a sprain and perhaps rupture, partial or complete, of the adductor longus muscle.

The cause of the accident is a sudden contraction of the adductors, in an effort to get a firm grip of the saddle consequent upon the horse shying, suddenly rearing, making a false step, or in taking a fence. In consequence of this sudden and violent contraction, some of the fibres of the adductor longus are ruptured near their origin. Mr. Morris* states that the right side is more often affected than the left.

The symptoms of the accident are pain, more or less severe according to the extent of injury, inability to maintain the seat in the saddle; and upon dismounting, walking causes a good deal of dull aching pain in the upper and inner side of the thigh, whilst upon attempting to remount the pain becomes very severe, and the effort impossible. The pain is also increased by pressure applied near the origin of the adductor longus. In the severer cases the sensations experienced at the time of the accident are severe pain, together with a feeling of tearing of the adductor muscles. There is always a good deal of ecchymosis present, and even hæmaturia may result. The accident is more common in civil than in military life, hunting men being more especially liable to it.

I think the non-occurrence of this accident in the army may be due partially to the different way that military men sit, as they always ride with very long stirrup leathers, and also to the fact

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* *Lancet*, vol. ii., 1882, p. 133.

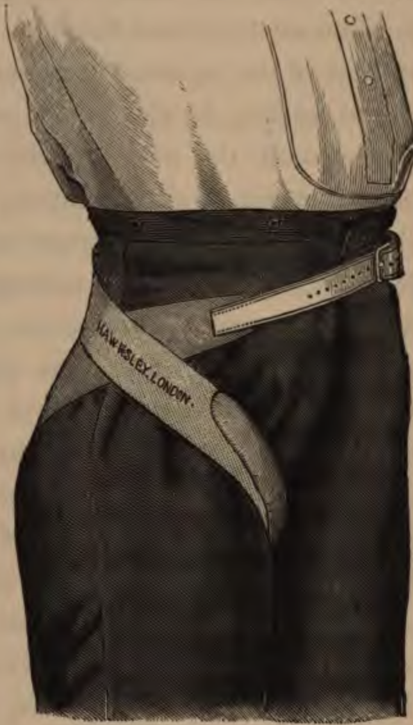
HAWKSLEY. LONDON.

FIG. 7.
Hawksley's Belt for Rider's Sprain.

that the army horses, being as well drilled as the men, are not so liable to suddenly jumping around, and shying, as is not unfrequently the case with a "fresh" hunter.

In proof of this we find that military men when not on parade, are as liable to it as other men, and it is not at all uncommon to find them rupturing their adductors during polo, here perhaps the sense of insecurity experienced from the narrow seat, the small size of the animal, and the sensation of having very little in front of one, has something to do with helping to produce the accident. The treatment consists in applying support and pressure to the part. Most of the instrument makers supply a spica bandage for this purpose. Mr. Hawksley of Oxford Street, pads a web sufficiently long to make a spica turn round the upper part of the thigh and pelvis. It is fastened on outside the breeches, and its assisting power is very great, as the rider can firmly grip the saddle when wearing it.

For temporary use there is nothing better than a stirrup leather applied in the same manner.

SPRAINED KNEE.

The knee joint may be sprained from various causes, amongst the most common are foot-ball and lawn tennis. It must not be supposed that there is anything peculiar in the so-called "tennis knee," or in the "tennis leg," to be described presently, such as we find to be the case in "lawn tennis arm," but they are merely examples of injury received during this popular game.

Sprained knee always occurs when that joint is extended, and is caused by a twist outwards of the foot, or the foot being fixed and the knee extended, the thigh is rotated outwards, carrying the weight of the body with it. An example from this latter cause is seen in the "tennis knee," when the foot is fixed by the india rubber soles to the ground, and the body is swung round in trying to take a difficult "serve."

The symptoms are swelling of the joint due to synovitis and great pain at the posterior border of the internal lateral ligament, pain being increased by pressure upon this spot.

The treatment consists in carefully enveloping the joint in a well applied plaster of Paris bandage, which should be worn for about three weeks, after which time the joint should be freely manipulated, and an elastic knee cap worn for a couple of months longer.

In those old cases of sprained knee which one sometimes comes across, and which are characterised by pain especially marked over the internal ligament, and some stiffness of the joint, the treatment consists in manipulations to break down the adhesions.

In order to do this the foot should be grasped with one hand, and the other used to steady the knee at the same time making pressure upon the inner side or painful spot with the thumb. The knee should then be fully flexed by short, sudden, and sharp jerks, and afterwards fully extended. These directions are applicable for breaking down adhesions in the knee-joint from causes other than old sprains, *e.g.* immobility from being included in splints, stiffness after rheumatism, synovitis, &c.

DISLOCATION OF THE SEMI-LUNAR CARTILAGE OF THE KNEE—SUBLUXATION OF THE KNEE—INTERNAL DERANGEMENT OF THE KNEE JOINT.

William Hey in his *Practical Observations in Surgery* was the first to describe this injury, describing it as an "internal derangement of its component parts; and that sometimes in consequence of trifling accidents." During some slight effort to save oneself from falling, or in a sudden effort to rise from the kneeling position, a sudden and sickening pain in the knee is felt, and a sensation of strain or slight rupture of the joint is experienced at the same time.

The limb will be found in a semiflexed position, and walking is attended with acute pain, as the limb is unable to be extended. If on the other hand the patient sits down and lets his leg hang, flexion is quite easy. In most cases the edge of the semi-lunar cartilage can be felt projecting forwards beneath the skin on the inner side of the knee, and some degree of synovitis is generally present. The treatment consists of forcibly flexing the knee-joint, pressing with the thumbs upon the projecting cartilage, and then suddenly extending.

This injury is of common occurrence, and is occasionally treated as simple synovitis of the knee-joint.

When patients have once had dislocation of the semi-lunar cartilage they are subject to its recurrence, and in order to prevent this the patient should be directed to wear an elastic knee-cap for a few months.

It is noticeable that the cartilage is often spontaneously reduced, and this generally occurs whilst the patient is sitting in a chair and swinging the leg.

TRANSVERSE FRACTURE OF THE PATELLA.

I usually treat this injury by the plan recommended by Mr Heath, namely applying immediately the plaster of Paris bandage, having previously aspirated the knee-joint if there is much effusion.

The fragments should be approximated by flexing the thigh, the knee being extended, the upper fragment should be drawn down and fixed in position with a pad of lint and a strip of strapping plaster wound round the limb. A flannel roller is then to be applied and plaster of Paris bandages over this from the middle of the leg to as high as possible up the thigh. The foot should be kept elevated to flex the thigh for about three days after which time the patient may get about on crutches, removing the plaster after two months from the time of the accident, and replacing it with a strong leather knee-cap. Mr. Heath recommends cotton wadding to be placed under the plaster, but I prefer the flannel applied as above.

If the patient chooses, Lister's operation of wiring the patella may be performed, but I should like to draw attention here to the fact that Mr. Royes Bell* has lately seen a case at King's College Hospital, which was treated in 1868 with Malgaigne's hooks and discharged from the hospital with *bony* union in which the fragments are now two inches apart. *Verbum Sapientibus.*

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* *Medical Times and Gazette*, vol. ii., 1883, p. 597.

RUPTURE OF THE PLANTARIS TENDON, "LAWN TENNIS LEG."

Renewed attention has lately been directed to rupture of the plantaris tendon, owing to its frequent occurrence during lawn tennis, and hence the injury when received during this game is generally dignified by the name of "lawn tennis leg."

The sensation experienced when rupture of the plantaris tendon takes place, is as though some one had sharply hit the calf of the leg with a stick, or during lawn tennis the patient will probably stop suddenly and ask his opponent who threw a ball at him and hit him on the calf.

The patient, who is usually over thirty-five years of age, is unable to stand or bear any weight upon the leg, and suffers pain of a very severe and stinging character. The treatment of these cases was until recently not very satisfactory, as it involved the patient lying up for a month or more, a most irksome proceeding, so that lawn tennis players owe a debt of gratitude to Dr. Wharton Hood who suggested that these cases should be treated by supporting the structures of the calf, and at the same time making the patient use his limb persistently. He says,* "As soon as possible after the occurrence of the rupture the patient should be placed upon a sofa, with his injured leg raised above the level of his head; and should be kept in this position for five minutes. This is an important preliminary, because the position alone will be sufficient to empty the limb of superfluous blood, and thus reduce the swelling which is commonly present. A calf which is much enlarged and very hard, will frequently return to its natural dimensions within the time specified; and the patient will at once obtain relief from the oftentimes distressing feeling of tension. Moreover if the elevation of the limb be neglected, the plaster, next to be described, will soon be loosened by the subsidence of the swelling, and will require to be replaced within a few hours. After a sufficient period of elevation, and while the leg is still raised, strips of adhesive plaster, each an inch and a half in width and of the length adapted to the size of the limb, should be applied from two inches above the ankle-joint to above the thickest part of the calf, somewhat as strapping is applied in the treatment of chronic ulcers of the leg. When the plaster is well adjusted it disperses the effusion of blood and lymph, and restores the natural flow of the circulation; while at the same time it holds all the muscular and tendinous structures firmly together, and practically converts the sound portions into a splint for those which are torn."

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* *Lancet*, vol. ii., 1884, p. 728.

Directly after the plaster is applied, the patient must be encouraged to walk about, and the surgeon must see that he puts his heel well down upon the ground; when after a few attempts he finds how well he can do it, his delight becomes boundless, resembling the pride of a child taking its first few steps unassisted.

The strapping should be re-applied after three or four days, and again when this becomes loosened, leaving it off when the patient feels he is able to walk without its support. This plan of treatment is that I have always used in the treatment of sprained ankle, and in both this injury and in the lawn tennis leg, the great element of success consists in making the patient walk after having well supported the leg with strapping plaster. Making the patient walk is often very difficult to accomplish with nervous people, and great patience will often have to be exercised before one can get them to use the injured leg.

ON SPRAINS OF THE ANKLE JOINT.

A sprain includes all injuries to a joint and its surrounding structures produced by a sudden twist but stopping short of dislocation. In severe cases it is attended by rupture of some of the ligaments, stretching, dislocation, or rupture of tendons, together with acute synovitis. The sprain may be severe or mild according to the nature of the accident, the former including the above lesions, whilst in the latter case only a few ligamentous fibres are ruptured, to which over-stretching of the tendons may be added.

The treatment I adopt in recent sprains is almost exactly that described for lawn tennis leg, only the foot and ankle joint are strapped in this case instead of the calf. If the strapping is evenly and firmly applied, the patient, even in most severe sprains, will be able to walk well after a quarter of an hour's practice.

The following is a case in point:—A gentleman who weighs nearly fourteen stone, whilst playing lawn tennis, was running quickly to take a ball, when he tripped over a bank, and falling down twisted his right foot under him. He was in great pain, and lay for some minutes writhing in agony: after a little time, however, he managed with help to limp into my consulting room. I found a very severe sprain of the ankle, movements of the joint being very painful, and swelling of the foot and leg coming rapidly on.

The limb was elevated, and carefully strapped, with great relief to the pain.

The patient by my advice immediately began to walk about, and since that time has suffered no real inconvenience from the accident as there was only pain during over extension of the foot, such as in wiping the toes on a mat, and this only lasted a little time. The only difficulty at first was ascending and descending stairs, but this went off after about forty-eight hours, and four days after the accident, there was no perceptible lameness. The patient from the first was able to continue his employment, which required many hours' standing in the day.

Some surgeons treat sprains from the first with enforced rest which has the disadvantage of occasionally leaving a stiff joint with swelling round the ankle.

When this has been the case the following description of Sir James Paget accurately describes the external condition of the joint.*

"It is generally stiffish and weak, sensitive, aching after movement, or in the evening, or at night, sometimes swollen, puffy or œdematous, but not with an œdema calidum."

The treatment of these cases consists in forcibly moving the joint, in order to break down the adhesions and supplementing this with shampooing, frictions, &c.

The method of manipulating the ankle joint I shall describe later on when discussing the after-treatment of Pott's fracture.

The following is a case of sprain treated by too long continued rest, the particulars of which have been kindly communicated to me by the patient herself.

---

* *Op. cit.*

A young lady whilst on a walking tour in Normandy in getting down from a grassy bank, severely sprained her ankle, which quickly became very much swollen, and rendered walking impossible. Upon reaching her hotel she treated it with hot water, frequently applied, and two days afterwards was able to put her boot on. She then returned to England, avoiding using her foot, and went on the third day after the accident to Bognor. She walked from the station, and for the next few days took short walks in a slow and careful manner. Whilst at Bognor the foot was put in sea water, and occasionally held under the tap at the sea water baths.

Later on the patient went to London, she continued to walk, but the ankle still remained weak, and easily pained by the slightest abduction of the foot. She then consulted a well known hospital surgeon who ordered her hot water and rest, but being obliged to get about she started a pair of crutches. Later on another visit was paid to the same surgeon, but, as no progress was made towards recovery, she stayed away. Four months after the accident, being still very lame, and the joint very painful, she consulted

Dr. Wharton Hood, who freely manipulated the joint under ether, and ordered the joint to be well shampooed every day for an hour or so for two or three weeks afterwards. In less than a month after the joint had been manipulated the patient had free use of the limb, though the consciousness of having a foot which had been hurt was not lost for some months afterwards.

POTT'S FRACTURE.

In the term of "Pott's fracture," I include for convenience all fractures of the tibia and fibula in the neighbourhood of the ankle joint. I do not intend to go minutely into the diagnosis of the several varieties, but only wish to draw more attention to the treatment of these fractures, as my experience leads me to the conclusion that they are a fruitful source of lameness from two causes, viz.—adhesions in and around the ankle joint, supplemented or not as the case may be, with a partial dislocation of the foot backwards.

The cause of the adhesions is frequently too long confinement in splints or immovable apparatus, together with a diffidence upon the part of the surgeon in charge of the case, in manipulating the joint after the bandages have been discarded.

The cause of the subluxation of the foot backwards is due, I shall endeavour to show, to the action of the gastrocnemius muscle, from the foot being put up at an obtuse angle, instead of at right angles, to the bones of the leg.

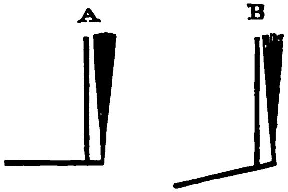

FIG. 8.

If the foot is put up at a right angle to the leg as shown at A in the diagram, however much the gastrocnemius contracts it cannot pull the foot backwards, but when the foot is put up at the angle shown at B, a little reflection will at once show how very easy it is for the foot to be subluxated backwards by the action of the gastrocnemius when the fibula is broken, and the internal lateral ligament ruptured or the internal malleolus broken off.

I always treat simple fractures in the neighbourhood of the ankle joint, by putting them up immediately in a plaster of Paris boot, extending from the base of the toes to the tubercle of the tibia, being very careful to keep the foot at right angles to the leg, and the great toe in a right line with the inner border of the patella. This boot is kept on for six weeks, the patient meanwhile getting about on crutches on the second, third, or fourth day, according to the age of the patient, and nature of the injury.

After taking off the plaster at the end of the above stated time, there is necessarily some stiffness of the ankle joint, due to the injury and subsequent enforced immobility of the limb.

In order to satisfactorily break these adhesions down, the foot should be grasped firmly by the metatarsus with one hand, the other gripping the ankle from behind. Having flexed the knee, the foot should be well flexed and extended by sudden sharp movements and afterwards inverted and everted.

In most cases this will set free the adhesions round and in the ankle joint, but in cases of stiff ankle of long standing from sprains, fractures, &c., from the shortness and mobility of the lever, it will be found that by this means, only the medio-tarsal and calcaneo-scaphoid joints have been moved, and that consequently the adhesions between the astragalus and the tibio-fibular surfaces have not been ruptured.

A little care is necessary in order not to fall into the error of supposing one has moved the ankle joint when only the tarsal joints have in reality been manipulated ; as it must be remembered that these latter joints will acquire a degree of flexibility astonishing to any one who has never seen them substituted for the ankle movement.

In order to satisfactorily make out real immobility of the ankle joint, an assistant should grasp the heel with one hand, and the metatarsus with the other, alternately flexing and extending the foot, whilst the surgeon should feel the head of the astragalus where it articulates with the scaphoid, and find out whether or not the bone moves, or he may find the anterior edge of the lower end of the tibia, and press between this edge and the articular surface of the talus and thus estimate the movement.

The ankle joint also may be felt very easily between the external malleolus and the tendon of the peroneus-tertius muscle. Having satisfied ourselves that there are adhesions in the joint, it becomes necessary now to fix the tarsal joints in order to lengthen and at the same time to dispense with the mobility of the lever at our disposal.

The best way to accomplish this is to cut a piece of poro-plastic to fit the sole, and having heated it, mould it accurately, fixing it in position with single layer of flannel roller, over this some plaster of Paris bandage should be applied from the root of the toes to the heel, avoiding the malleoli.

The plaster bandages should be put on fairly thickly in order that they may give a good degree of firmness.

The next day this plaster shoe will be found quite stiff. The whole of the foot may now be made use of as a lever, and the ankle joint may thus be easily manipulated without any movement taking place in the other tarsal joints.

When as from reasons stated previously, there is a subluxation of the foot backwards, the heel will be found slightly more prominent than normal, there will be immobility of the ankle joint, and the foot will be found in a position of slight extension, there is also shortening of the foot anteriorly, taking a point from the anterior lower edge of the tibia to the roots of the toes.

In the treatment in these cases it will generally be found necessary to divide the tendo Achilles, after which the subluxation can be easily reduced. The foot should then be put up in a plaster of Paris boot for three weeks.

The method here recommended for treating Pott's fracture has many advantages, amongst which may be enumerated, great satisfaction and little trouble to the surgeon and patient, there is no adjusting of the bandages to take place every day, the perfect immobility prevents any displacement of the bones, and pain is reduced to a minimum.

There is no danger of gangrene, provided the plaster bandages are unrolled and laid on in the manner to be described in the chapter upon this splint, as there being no movement possible the most potent cause of swelling is removed.

It does away with any tendency to hypostatic pneumonia, as the patient can quickly get about on crutches, having the leg slung from the neck.

The length of time required in most cases being only six weeks, immobility of the ankle joint is never severe, the adhesions rending with sharp movements of the joint, an anæsthetic only being required in nervous and timid patients, and lastly in business men it may save them considerably to be able to look after things themselves, instead of leaving them to others as must be done when they are laid up in bed for three weeks or a month, the method ordinarily adopted in treating fractures.

APPENDIX I.

THE PLASTER OF PARIS BANDAGE.

IT will not be out of place at the end of this book in which frequent allusion has been made to the plaster of Paris bandage, to give a few hints as to the best method of preparing this splint.

I should advise every surgeon either to roll his own bandages or else to have them rolled under his immediate supervision, as those bought ready rolled are worse than useless.

The plaster should be the best modeller's, recently baked, and should be carefully rubbed into muslin bandages, six yards long and from two to three inches wide, according to the nature of the case to be treated.

The bandages may be kept rolled ready for use if they are kept in a tin box and in a perfectly dry and warm place. If they become at all damp, they should be put in a hot oven for half an hour to dry them.

In all cases it will be found best to envelop the limb in a flannel roller carefully applied, and then having thoroughly wetted the plaster bandage, the superfluous moisture having been squeezed out, to simply unroll the plaster bandage when applying it to the limb, using no pressure, and being careful not to drag it. In this way three or four layers may be put on, and when enough has been judged to have been applied, the whole may be smoothed by rubbing the limb round and round with wet hands.

It is the practice of some surgeons to put wet plaster over the bandage, in order to smooth the surface, but this only adds to the weight of the splint, and is of no use to strengthen it.

APPENDIX II.

CASE OF RHEUMATOID ARTHRITIS TREATED BY MANIPULATION.

THE following case of rheumatoid arthritis which was treated by manipulation of the joints is, as far as I can learn, unique, and I am induced to publish it as an appendix, hoping that other cases may be benefited by this mode of treatment.

M. C., a woman aged thirty-five years, was first attacked with rheumatoid arthritis in November, 1882, and came under my care the following April. The joints affected were knees, ankles, tarsal, elbows, wrists, metacarpal and phalangeal, shoulders, lower jaw and cervical vertebræ. She was very lame, could only hobble along, and was unable to dress herself.

There was swelling, pain and very limited movements in all the joints affected.

I treated her with salicylate and iodide of soda internally, with iodide of potassium liniment externally, which relieved her of pain. After about two months treatment as above, the patient thus describes her condition. "My right foot was so bad that I could not get it straight, quite turned in, I walked with a stick, could not dress myself, or get my hands to my face, or bend my knees or feet in the least."

At the end of July, I recommended a course of Turkish baths, but the patient was unable to take more than three, as they weakened her.

Upon the 20th of August, 1883, the patient being under ether, I manipulated all the affected joints, and the result was remarkable, the left knee and ankle only not being much benefitted.

Thinking perhaps that I had not moved these sufficiently, a week later I again placed her under ether, and very freely manipulated all the joints, especially directing my attention to the two obdurate ones.

After this second operation, the patient could move all her joints, walk about, get up out of her chair, and go out for short walks.

A month later I sent her to Bath for a time, which certainly expedited the cure, as she came home perfectly well. Up to the present time (Feb. 1885) she has not had any rheumatic pains or stiffness return, and in her own words she expresses herself "perfectly cured," and is proportionately grateful.

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